

**WHAT IS CLAIMED IS:**

1. A computer-based method of generating natural language,  
comprising the steps of:

receiving a concept comprising attributes and  
5 corresponding values of each of said attributes from a user;  
receiving grammar rules from the user, each rule  
including a head, a phrase fragment, a direction and a condition,  
wherein each phrase fragment includes one of said attributes;  
receiving a scoring function from the user;  
10 generating possible natural language phrases using the  
grammar rules;  
determining an optimal natural language phrase from the  
possible natural language phrases using the scoring function; and  
returning said optimal natural language phrase to the  
15 user.

2. The method of claim 1, wherein the head is a word.

3. The method of claim 1, wherein the phrase fragment is a  
natural language phrase fragment.

20 4. The method of claim 1, wherein the direction indicates a  
location of the phrase fragment.

5. The method of claim 1, wherein the condition is a code fragment for restricting use of a rule.

6. The method of claim 1, wherein each attribute in the optimal natural language phrase is replaced with its corresponding value.

5 7. The method of claim 1, wherein the optimal natural language phrase is a highest scoring natural language phrase that is consistent with the grammar rules.

8. The method of claim 1, wherein the scoring function comprises the equation:

10 
$$\prod_{i=1}^N P(w_i | w_{i-1}, w_{i-2})$$

9. The method of claim 1, wherein the attributes are variables.

10. The method of claim 4, wherein the direction indicates that the location of the phrase fragment is right of the head.

11. The method of claim 4, wherein the direction indicates that  
15 the location of the phrase fragment is left of the head.

12. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to

perform the method steps for generating natural language, the method comprising the steps of:

receiving a concept comprising attributes and corresponding values of each of said attributes from a user;

5 receiving grammar rules from the user, each rule including a head, a phrase fragment, a direction and a condition, wherein each phrase fragment includes one of said attributes;

receiving a scoring function from the user;

10 generating possible natural language phrases using the grammar rules;

determining an optimal natural language phrase from the possible natural language phrases using the scoring function; and

returning said optimal natural language phrase to the user.

15 13. The program storage device of claim 12, wherein the head is a word.

14. The program storage device of claim 12, wherein the phrase fragment is a natural language phrase fragment.

20 15. The program storage device of claim 12, wherein the direction indicates a location of the phrase fragment.

16. The program storage device of claim 12, wherein the condition is a code fragment for restricting use of a rule.

17. The program storage device of claim 12, wherein each attribute in the optimal natural language phrase is replaced with its corresponding value.

18. The program storage device of claim 12, wherein the optimal natural language phrase is a highest scoring natural language phrase that is consistent with the grammar rules.

19. The program storage device of claim 12, wherein the scoring function comprises the equation:

$$\prod_{i=1 \dots N} P(w_i | w_{i-1}, w_{i-2})$$

20. The program storage device of claim 12, wherein the attributes are variables.